Loneliness among older adults in the Netherlands, Italy and Canada

van Tilburg, T.G.; Havens, B.; de Jong-Gierveld, J.

published in
Canadian Journal on Aging = La Revue canadienne du vieillissement
2004

DOI (link to publisher)
10.1353/cja.2004.0026

document version
Publisher's PDF, also known as Version of record

Loneliness among Older Adults in the Netherlands, Italy, and Canada: A Multifaceted Comparison

Theo van Tilburg
Vrije Universiteit, Amsterdam

Betty Havens
University of Manitoba

Jenny de Jong Gierveld
NIAS, Wassenaar, The Netherlands

RÉSUMÉ

La solitude est une expérience commune à de nombreuses cultures. Pour évaluer correctement les différences transculturelles, il faut examiner le degré de solitude, ses déterminants et les méthodes de mesure employées. Toutefois, les études transculturelles prennent rarement en compte plus d'un seul de ces facteurs. Ici, l'auteur part de l'hypothèse que les différences enregistrées dans le degré de solitude reflètent les différences nationales face aux relations avec les partenaires, la famille et les amis, différences qu'il suppose liées aux normes culturelles de la société. L'étude porte sur les différences notées chez des aînés mariés et veufs âgés de 70 à 89 ans, qui vivent de façon autonome au Pays-Bas (N = 1847), en Toscane, Italie (N = 562) et au Manitoba, Canada (N = 1134). La solitude a été mesurée à l'aide d'une échelle à 11 items. Les Manitobains ont un score élevé pour la solitude affective et les Toscans pour la solitude sociale. Exception faite du statut civil, les déterminants sont presque identiques dans les trois régions étudiées. Pour la plupart des items, l'auteur examine le rôle du fonctionnement différencié des items (*differential item functioning* - DIF) dans les trois régions, les interactions avec le sexe et le fait que les sujets étudiés aient ou non un partenaire.

ABSTRACT

Loneliness is experienced in many cultures. To properly assess cross-cultural differences, attention should be paid to the level, determinants, and measurement of loneliness. However, cross-cultural studies have rarely taken into account more than one of these. Differences in the level of loneliness were hypothesized on the basis of national differences in partnership, kinship, and friendship, which were assumed to be related to cultural standards within a society. Differences were examined among married and widowed older adults aged 70 to 89 years living independently in the Netherlands (N = 1,847), Tuscany, Italy (N = 562), and Manitoba, Canada (N = 1,134). Loneliness was measured with an 11-item scale. The Manitobans were high on emotional loneliness and the Tuscans were high on social loneliness. Partner status excepted, the determinants were nearly the same across the three locations. Differential item functioning (DIF) related to the three locations was observed for most items. Interactions with gender and the availability of a partner relationship were observed.

Manuscript received: / manuscrit reçu : 23/01/02

Manuscript accepted: / manuscrit accepté : 09/12/02

Mots clés : vieillissement, solitude, personne âgée, différences transculturelles, partialité du test culturel, DIF

Keywords: aging, loneliness, aged, cross-cultural differences, cultural test bias, DIF

Requests for offprints should be sent to: / Les demandes de tirés-à-part doivent être adressées à :

Professor Dr. T.G. van Tilburg
Faculty of Social Sciences
Vrije Universiteit
de Boelelaan 1081, NL-1081 HV
Amsterdam, The Netherlands
(TG.van.Tilburg@fsw.vu.nl)

Previous research has revealed that loneliness is a pervasive social problem and is experienced in many cultures. However, cross-cultural differences in the frequency of loneliness have been observed; for exam-

ple, Swedish centenarians were often lonely, while centenarians in Georgia, U.S., seldom reported being lonely (Martin, Hagberg, & Poon, 1997). In a comparison of Italian, Anglo-Canadian, and Chinese-Canadian adults, sex and nationality differences emerged, with loneliness being highest among Italian females and lowest among Chinese-Canadian females (Goodwin, Cook, & Yung, 2001). Canadian adults experienced more loneliness than did Croatians (Rokach, Orzeck, Cripps, Lackovic-Grgin, & Penezic, 2001). The experience of loneliness of North American residents differed, depending on their country of origin and cultural background (Rokach & Sharma, 1996). After controlling for a number of demographic variables, adults in Italy and Japan reported more loneliness than adults in the U.S. and Canada, while adults in a number of western and northern European countries as well as in Australia, reported less loneliness (Stack, 1998). Within Europe the number of older adults experiencing loneliness increased from north to south (Jylhä & Jokela, 1990).

The present study describes differences in *emotional* and *social* loneliness among older adults in three locations: the Netherlands, Italy, and Canada. Following the cognitive theoretical approach to loneliness (Peplau & Perlman, 1982), loneliness was defined as "a situation experienced by the participant as one where there is an unpleasant or unacceptable lack of (quality of) certain social relationships" (de Jong Gierveld, 1989, p. 205). The dimensions of emotional and social loneliness were identified, as suggested by Weiss (1973). Emotional loneliness is the lack of a specific, intimate relationship, and social loneliness is a lack of social integration and embeddedness. The first research question is whether there are differences in the loneliness of older adults in the three locations.

In previous studies that did not address emotional and social loneliness specifically, most efforts were directed to describing differential rates of loneliness, not only by individual characteristics but also by cultural standards within a group or society. According to Johnson and Mullins (1987), loneliness is high in collectivist communities (whether family-oriented, community-oriented, or society-oriented), where sensitivity to social exclusion is stronger than in individualistic communities. North America is more individualistically oriented than Europe, while within Europe, southern countries are still more strongly oriented towards collectivistic traditional family patterns than northern countries (Ester, Halman, & de Moor, 1994). Based upon Johnson and Mullins, we hypothesize that the smallest likelihood of being lonely exists in Canada and the greatest likelihood of being lonely exists in Italy, with the Netherlands in between. However, this general hypothesis remains to be made specific for emotional and social loneliness.

Jylhä and Jokela (1990) assumed that there is consistency between the overall value system of a society and its social formation and that an individual situation not congruent with the dominant situation contributes to loneliness. A study by Höllinger and Haller (1990) provided data on kinship and personal networks in seven countries, with Australia and Hungary in regions other than those of the three locations in our study. Differences were observed between the U.S., northwest Europe (Great Britain, Germany, and Austria), and Italy. Loose kinship ties due to high urbanization, geographical largeness, and high geographic mobility characterized the U.S. In northwest Europe, loose kinship ties characterized urban areas but not small towns and villages; and in Italy, close kin relationships were quite common. In rural areas, the percentage of those living quite near their mother's house was high in Italy, medium in Austria and Germany, and low in the U.S. With regard to the number of friends, differences were observed only for the older age groups: the lowest number among Germans and Austrians, followed by the British and Italians, and the highest among Americans. However, Höllinger and Haller noted that these variations could be viewed to be the result of different sociocultural concepts of *friendship*: Americans define the concept of friend in a wider and more casual way than do people in other nations. With respect to a spouse, a relatively small number of Italians identified their spouse as the one from whom help was expected in an emergency situation (Höllinger & Haller, 1990). We assumed that the availability of kin and friends could be considered to affect older adult's social loneliness. The comparative data on kinship led to a more specific hypothesis, parallel to the general hypothesis, that social loneliness would be high in Italy and low in Canada, with the Netherlands in between. However, based on the comparative data on friendship, a more specific, alternative hypothesis would be that social loneliness would be low in Italy and high in Canada, with the position of the Netherlands difficult to identify. With respect to the availability of a spouse, we assumed that it would affect emotional loneliness and hypothesized that emotional loneliness would be low in Italy and high in both Canada and the Netherlands.

The direct comparison of loneliness indicators across culturally different groups was limited due to language and other cultural differences. We analysed data on loneliness measured with an 11-item scale developed in the Netherlands and translated using standard back translation procedures. To assess the extent to which cross-cultural differences existed, we examined determinants of loneliness and the meas-

urement of loneliness, in addition to the intensity of feelings of emotional and social loneliness.

Determinants of Loneliness

In previous studies among older adults, differences in loneliness according to gender (higher levels of loneliness among females) and age (higher levels of loneliness among older people) were observed. However, these differences were related to other determinants of loneliness; in particular, to health and to the availability of a supportive and intimate partner relationship and a supportive network of other types of relationships. For example, previous studies in the Netherlands and Italy (van Tilburg, de Jong Gierveld, Lecchini, & Marsiglia, 1998), and Canada (Havens & Hall, 2001) have examined these determinants. The second research question is whether demographic characteristics, the availability of kin and friends in the network, and health contribute differentially to the explanation of differences in loneliness across the three study locations.

Measurement of Loneliness

Following van de Vijver and Poortinga (1997), a valid cross-cultural comparison presupposes that scores on loneliness have an equal psychological meaning, not only within but also across cultures. In other words, the loneliness scores should be free from bias. Three forms of bias can be distinguished: *construct*, *methodological*, and *item* bias. Construct bias is related to differences in the concepts of loneliness used in the different cultural settings (different definitions or conceptualizations). Methodological bias is related to cultural factors that affect the responses in any given fieldwork situation (e.g., cross-cultural differences in self-disclosure). Item bias is related to cultural factors that affect specific items (e.g., idiosyncratic differences in the appropriateness of the item content). Since the concept, as well as the measuring instrument, was the same in the three locations, we did not investigate construct bias. Furthermore, no individual data on sources of methodological bias were available. Therefore, we focused on item bias, which is commonly referred to as *differential item functioning* (DIF). DIF means that an item inaccurately measures the loneliness for a specific group involved in the study, irrespective of whether the groups do or do not actually differ on loneliness. When an item does not measure loneliness equivalently for all groups, the scores are not interpretable with respect to loneliness. The third research question is whether DIF relative to living in three different locations is large compared to DIF related to the determinants of loneliness.

Method

Respondents

Dutch Sample

In 1992 face-to-face interviews were conducted with 4,494 respondents (Knipscheer, de Jong Gierveld, van Tilburg & Dykstra, 1995). They constituted a stratified random sample of men and women born in the years 1903 to 1937. The oldest, and the oldest men in particular, were over-represented. The sample was taken from the registers of three cities and eight rural communities in the west, south, and east of the Netherlands. The combination of a city and its surrounding communities within a region and the combination of the three regions together represented the variations in culture, religion, urbanization, and aging in the Netherlands. Within the sex and birth-year strata, the sample was representative of the Dutch older population. The response rate was 62 per cent.

Tuscan Sample

In 1993 and 1994 face-to-face interviews were conducted with 1,564 respondents who lived independently in northwestern Tuscany, Italy (van Tilburg, de Jong Gierveld, Lecchini, & Marsiglia, 1998). They constituted a random sample of independently living men and women born in the years 1903 to 1937. The sample was taken from the registers of 34 municipalities in the provinces of Pisa, Lucca, Livorno, and Massa-Carrara. The sample was representative of central northern Italy with respect to sex, age, urbanization, and social and economic circumstances. The response rate was 66 per cent.

Manitoba Sample

Interviews were conducted with older people in the province of Manitoba in 5 years: 1971, 1976, 1983, 1990, and 1996 (Chipperfield, Havens, & Doig, 1997). Loneliness data were collected in the 1996 interviews (N = 1,868). The age of the respondents ranged between 69 and 104 years. The initial samples were drawn from the Manitoba Health registry and were stratified according to sex and age. The sample was representative of the overall provincial older population. The response rate for the 1996 wave was 94 per cent.

To homogenize the samples from the three locations, we selected independently living older adults who were 70 to 89 years old. There were low numbers of never-married and divorced older adults and they were excluded from the analyses. Furthermore, respondents with scale or item non-responses were excluded. Table 1 outlines the breakdown of gender, age, partner status, parental status, kin, friends, and self-rated health within each of the final samples. The partner could be a spouse or a cohabitant. However, partner status equalled marital status to a large extent: 98 per cent of the respondents co-residing with a partner were married and 96 per cent of the respondents not co-residing with a partner were widowed. The samples differed with respect to demographic and

network characteristics and health. These differences were related to cultural differences, differences in the questionnaires (as outlined below), different sample procedures, non-response bias, and within the Manitoba sample, longitudinal attrition.

Table 1: Composition of the samples

Characteristics	Netherlands *N* = 1,847	Tuscany *N* = 562	Manitoba *N* = 1,134	Significance
Sex				$\chi^2_{(2)} = 29.6$*
Male	52%	43%	43%	
Female	48%	57%	57%	
Age				$\chi^2_{(6)} = 181.6$*
70–74	26%	47%	17%	
75–79	31%	23%	35%	
80–84	28%	23%	33%	
85–89	15%	7%	15%	
Partner in Household				$\chi^2_{(2)} = 8.1$
No	43%	46%	49%	
Yes	57%	54%	51%	
Children				$\chi^2_{(4)} = 461.1$*
No	10%	5%	8%	
Yes, in household	6%	40%	9%	
Yes	83%	56%	83%	
Kin Contacted Frequently				$\chi^2_{(2)} = 128.3$*
No	13%	27%	7%	
Yes	87%	73%	93%	
Friends Contacted Frequently				$\chi^2_{(2)} = 703.1$*
No	81%	90%	40%	
Yes	19%	10%	60%	
Self-rated Health (1–5)	3.6	2.9	3.6	$F(2,3540) = 146.7$*

* $p < 0.001$

Measurements

An 11 item-scale was constructed, consisting of six negatively phrased and five positively phrased items measuring the presence of a certain intensity of deprivation, which was considered to be the essence of loneliness (de Jong Gierveld & Kamphuis, 1985). However, the homogeneity of the scale proved to be not very strong. In the search for more homogeneous subscales, two factors emerged (de Jong Gierveld & van Tilburg, 1991; van Baarsen, Snijders, Smit, & van Duijn, 2001). The first, most homogeneous factor was the subscale of the negatively phrased items, reflecting the dimension of emotional loneliness. The second subscale, the positively phrased items, reflected social loneliness. The scales correlated (0.51 and 0.70, respectively) with an abbreviated version of the UCLA loneliness scale (Russell, Peplau, & Cutrona, 1980) and (0.64 and 0.35, respectively) with a single, direct question on loneliness (de Jong Gierveld & van Tilburg, 1991). The items had three response categories: *no*, *more or less*, and *yes*. For the positively phrased items, the scores were reversed, so that a higher score indicated loneliness. The frequency of the scores was highly skewed (Table 2).

Besides demographic characteristics (gender, age, the availability of a partner, and parental status), in all three studies, data on the composition of the personal network were collected. Within the Dutch study, network members were identified by name, adopting a domain-specific approach. The relationship type and contact frequency were assessed for all network members, and the number of kin (including children) and of friends contacted at least weekly was counted.

Table 2: Frequency of item scores across the samples (%; $N = 3,543$)

	Item	No	More or Less	Yes
1†	There is always someone I can talk to about my day-to-day problems.	76	9	14
2	I miss having a really close friend.	74	7	19
3	I experience a general sense of emptiness.	70	13	17
4†	There are plenty of people I can lean on when I have problems.	81	10	10
5	I miss the pleasure of the company of others.	70	11	19
6	I find my circle of friends and acquaintances too limited.	72	10	18
7†	There are many people I can trust completely.	67	16	17
8†	There are enough people I feel close to.	77	12	11
9	I miss having people around.	69	11	20
10	I often feel rejected.	86	6	8
11†	I can call on my friends whenever I need them.	78	9	12

† Positively phrased items; Scores reversed

The same procedure was adopted in the Tuscan study. The procedure is described in detail in van Tilburg et al. (1998). Among the Dutch, the number of kin varied between 0 and 29 ($M = 3.7$, $SD = 3.2$) and the number of friends between 0 and 9 ($M = 0.4$, $SD = 1.0$). The Tuscans identified smaller networks; their number of kin varied between 0 and 12 ($M = 2.5$, $SD = 2.4$) and their number of friends between 0 and 4 ($M = 0.1$, $SD = 0.5$). In the Manitoba study respondents were asked whether they had any relatives and then were asked two questions starting with "Of the relatives (including any in household) you feel closest to, how many relatives do you see or talk to … ?"; the sentence was completed with *every day* and *once a week* or *less often than once a month*. Furthermore, the question, "How many people that you know do you consider close friends; that is, people you can confide in and talk over personal matters with?" was posed, followed by "Now take the friends you're closest to – How many of these friends do you get together with … ?"; the sentence was completed with *every day*, *once a week*, and so forth. The number of kin contacted at least weekly varied between 0 and 35 ($M = 3.4$, $SD = 3.1$); and the number of friends between 0 and 120 ($M = 2.9$, $SD = 8.0$). Due to the different identification procedures and the skewed distributions, the variables were dichotomized (kin and friends available versus not available). In all three studies the same single question on self-reported health was asked – "How is your health in general?" – with five response categories, ranging from *poor* to *very good*.

Procedure

Latent class analysis (LCA), as implemented in the computer program Latent Gold (Vermunt & Magidson, 2000), was applied to compute individual scale scores. Compared to other methods of computing scale scores, such as computing sum scores of selected items (de Jong Gierveld & van Tilburg, 1991) and ordinary factor analysis methods, LCA has several advantages. First, item scores are treated as being ordinal level measures, as opposed to continuous and normally distributed variables. Secondly, the same scores on different items may have various weights in computing scale scores. Finally, co-variates can be introduced in the factor model in order to correct for DIF. A two-factor model was analysed. The model allowed items to be indicators of both factors. For each of the factors, a low and a high level were distinguished. The probability of an individual's being in the higher level, estimated on the basis of all item scores, was taken as the score on the assumed loneliness dimensions. Two models were analysed; one without co-variates and the other with co-variates. The latter included direct effects of co-variates on the item scores. The co-variates were selected demographic and personal network characteristics, health, and the older adult's location.

Many techniques have been developed to detect DIF. They have in common the fact that expectations based on the other items are used to assess possible DIF (van de Vijver & Poortinga, 1997). We applied the method of estimating DIF for polytomous items, as suggested by Camilli and Congdon (1999). The item score was a logistic function of the scale scores (computed in the LCA factor analysis without co-variates) and of the co-variates. The association between item scores and co-variates is essential to DIF.

To assess differences in loneliness and differential effects across the three study locations, analysis of variance was conducted. A hierarchical model was tested, in which variance shared across factors was allocated first to sex, then to age, partner status, parental status, availability of kin and friends, self-rated health, and the older adult's location. The vari-

ance allocated to the location was unique variance; that is, having controlled for other factors. In a second step the significance of interaction effects between the location and other determinants was assessed.

Results

Measurement of Loneliness

Factor scores within the latent-class measurement model are presented in Table 3. Related to the large sample size, all parameters were significant. High loadings ($\beta > 1$) for the first derived factor, emotional loneliness, were observed for the negatively phrased items. The positively phrased items had loadings of 0.46 or less. Among the negatively phrased items, item 2 had the lowest item loading and item 5 the highest, indicating a differential contribution to the assessment of being emotionally lonely. The factor loading of the item response categories (not shown in the table) varied accordingly: For item 2, the loadings were 0.21, 0.55, and 0.75 for the answers *no*, *more or less*, and *yes,* respectively, and for item 5, the loadings were 0.12, 0.66, and 0.95, respectively. High loadings for social loneliness were observed for the positively phrased items; however, loadings for the negatively phrased items were relatively high ($\beta \geq 0.69$). To sum up, the negatively phrased items indicated emotional as well as – to a certain extent – social loneliness, while the positively phrased items indicated social loneliness, predominantly.

Table 3: Factor scores within the latent-class measurement model (co-variates not included; $N = 3{,}543$)

Items	Emotional Loneliness		Social Loneliness	
	β	Wald	β	Wald
1†	0.27	16.4*	1.23	346.4*
2	1.31	411.3*	0.69	103.9*
3	2.08	433.3*	0.93	88.8*
4†	0.46	25.3*	2.23	266.6*
5	2.70	360.1*	0.85	46.8*
6	1.43	378.9*	1.14	204.3*
7†	0.33	12.5*	2.05	475.2*
8†	0.45	25.7*	2.06	382.8*
9	2.33	424.8*	0.84	55.4*
10	1.63	227.7*	1.20	168.3*
11†	0.33	20.8*	1.53	364.2*

* $p < 0.001$

† Positively phrased items

The level of DIF was analysed by means of multinomial regression analyses of the item scores. Table 4 shows the significance of the two factor scores, the selected determinants of loneliness and the older adult's location, as indicated by the χ^2 statistic. The χ^2 statistic was based on the difference of the likelihood functions between the full model and a reduced model, formed by omitting an effect from the full model. The null hypothesis was that all parameters of that effect were 0. The effects of the factor scores derived from LCA, for emotional and social loneliness, reflected the results presented in Table 3. After controlling for both loneliness scale scores, the effects of gender, age, having children, kin and friends, and health were (nearly) absent, indicating no DIF related to these characteristics. However, significant and strong effects occurred for partner status and the older adult's location. The strongest effect for the availability of a partner was observed on item 3, "I experience a general sense of emptiness". Among those with equal scores on the loneliness scales, older adults with a partner were 5.6 times more likely to adopt the negative answer and 1.8 times more likely to adopt the answer *more or less* than older adults without a partner. Older adults in the three locations reacted differently on three negatively and five positively phrased items, especially on items 7, "There are many people I can trust completely", and 11, "I can call on my friends whenever I need them". From the results presented in Table 5, it can be seen that older people in Tuscany and Manitoba were much less likely to adopt the negative answer on item 7 than the Dutch were. Older people in Manitoba were much more likely to adopt the negative answer on item 11 than the Dutch were.

Table 4: Multinomial regression analysis with the item score as dependent variable and loneliness factor scores as derived from LCA (without co-variates), sex, age, partner status, parental status, kin, friends, self-rated health, and older adult's location as factors (*N* = 3,543)

Item	Emotional Loneliness	Social Loneliness	Sex	Age	Partner	Parental Status	Kin	Friends	Health	Location
	$\chi^2_{(2)}$	$\chi^2_{(2)}$	$\chi^2_{(2)}$	$\chi^2_{(6)}$	$\chi^2_{(2)}$	$\chi^2_{(4)}$	$\chi^2_{(2)}$	$\chi^2_{(2)}$	$\chi^2_{(2)}$	$\chi^2_{(4)}$
1†	9.4	639.8*	3.4	14.9	15.4*	0.7	2.3	3.2	3.1	53.9*
2	805.1*	149.7*	0.2	6.6	3.8	3.7	0.1	9.1	4.0	38.3*
3	1,478.5*	166.4*	0.0	10.3	139.1*	10.0	5.4	0.1	14.0	42.9*
4†	4.8	1,414.0*	1.0	10.5	0.0	12.5	7.2	10.0	0.9	71.3*
5	2,338.2*	92.1*	8.3	4.6	8.5	10.9	0.1	0.8	0.0	55.4*
6	799.7*	424.6*	5.8	22.6*	29.1*	3.1	0.4	0.3	5.4	8.8
7†	3.9	1,847.1*	0.6	17.5	2.1	3.0	0.1	11.2	1.5	105.2*
8†	12.4	1,369.9*	3.7	3.6	1.2	8.6	0.7	0.4	2.1	30.8*
9	2,055.8*	89.8*	0.8	2.0	0.6	4.3	1.3	2.5	2.8	12.8
10	501.9*	254.7*	0.4	7.8	1.2	5.2	3.0	4.8	14.4	6.9
11†	23.6*	894.1*	3.7	13.4	6.5	11.4	2.4	14.6*	4.8	79.0*

* $p < 0.001$

† Positively phrased item

The LCA two-factor model was re-analysed with the selected determinants and older adult's location as co-variates. Sex, age, and parental status were not significant ($p > 0.001$). The availability of a partner affected the measurement of emotional loneliness (Wald = 221.0, $p < 0.001$). The availability of kin and friends affected the measurement of social loneliness (Wald = 69.2, $p < 0.001$; and Wald = 82.6, $p < 0.001$; respectively). Self-rated health affected the measurement of emotional (Wald = 37.7, $p < 0.001$) and social loneliness (Wald = 94.7, $p < 0.001$). Older adult's location affected the measurement of social loneliness (Wald = 64.1, $p < 0.001$). The estimates of the probability of being lonely based on the model without co-variates, on the one hand, and with co-variates, on the other, correlated strongly (both $r = 0.97$). When corrected for DIF, emotional and social loneliness correlated 0.12. It was estimated that the overall probability of being emotionally lonely was 0.38 and of being socially lonely was 0.30.

Differences in Level of Loneliness

Table 6 presents the results of the analysis of variance for emotional and social loneliness. The correction of DIF by introducing co-variates in the LCA factor model resulted in a much better prediction of variability in loneliness. The R^2 changed from 0.123 to 0.198 for emotional and from 0.107 to 0.182 for social loneliness.

Differences in loneliness between older adults in the three locations were observed. After controlling for the determinants, due of necessity to the differences in the composition of the samples, and for DIF, the probability of being emotionally lonely was highest for Manitobans (0.51), followed by Tuscans (0.34), and the Dutch (0.32). With respect to social loneliness, older adults in Tuscany were most lonely (0.40), followed by those living in the Netherlands (0.29), and in Manitoba (0.28). These estimates did not deviate strongly from the estimates when the determinants were not taken into account. The correction for DIF resulted in larger differences between older adult's locations, but did not have an effect on the ranking of the locations.

Although sex and age were significant factors in the hierarchical model for emotional loneliness, the results showed that effects were small when corrected for the other factors ($\beta = 0.02$ and 0.03, respectively). Parallel to findings from previous studies, the availability of a partner relationship was strongly related to emotional loneliness. When adjusted for other factors, the probability of being emotionally lonely was estimated as 0.56 for older adults without a partner and 0.24 for those with a partner; however, no differences in social loneliness were observed. Of childless older adults (0.42) and parents with children outside the household, only (0.39) were more severely emotionally lonely than parents co-residing with children (0.34). With respect to social loneliness, childless older adults (0.41) and co-residing parents (0.37) were more severely lonely than parents with children outside the household, only (0.28). Older adults with frequent contact with kin in their network were less severely socially lonely than other older adults (0.27 and 0.54, respectively), as were those with friends (0.15 and 0.37, respectively). Effects of self-rated health were

Table 5: Odd ratios of the likelihood, within Tuscany and Manitoba, of adopting specific answering categories for the loneliness items (estimates derived from multinomial regression analyses)

Item	No		More or less	
	Tuscany	Manitoba	Tuscany	Manitoba
1	0.48*	1.75*	1.09	1.74
2	0.87	0.51*	1.54	0.98
3	1.87	2.89*	1.67	1.76*
4	5.03*	0.54	4.47*	0.79
5	1.05	0.25*	1.00	0.52*
6	1.30	0.98	1.78	0.90
7	0.19*	0.30*	0.65	0.38*
8	2.46*	1.57	1.54	0.84
9	0.49	0.77	0.61	0.70
10	0.74	0.95	0.90	0.66
11	1.15	4.05*	1.83	2.01

* $p < 0.001$

The answer *yes* and the Netherlands served as categories of reference.

Table 6: Analysis of variance of emotional and social loneliness (individual probabilities derived from LCA; *N* = 3,543)

	Emotional Loneliness		Social Loneliness	
	Without Co-variates	With Co-variates	Without Co-variates	With Co-variates
Significance of Factors				
	F	***F***	***F***	***F***
Sex	57.2*	114.8*	1.9	7.7
Age	17.8*	29.2*	0.8	1.4
Partner	205.6*	400.7*	3.1	0.5
Children	8.6*	10.4*	11.8*	24.3*
Kin	0.3	0.0	112.3*	207.1*
Friends	1.6	10.5	117.2*	237.5*
Health	19.7*	24.6*	32.7*	60.8*
Location	39.6*	68.1*	14.7*	18.8*
R^2	0.123	0.198	0.107	0.182
Effects				
	η	β	η	β	η	β	η	β
Sex	0.12	0.02	0.16	0.02	0.02	0.04	0.04	0.05
Age	0.12	0.03	0.14	0.03	0.03	0.03	0.03	0.03
Partner	0.28	0.27	0.37	0.36	0.01	0.03	0.01	0.01
Children	0.05	0.08	0.05	0.08	0.08	0.04	0.10	0.05
Kin	0.01	0.02	0.01	0.01	0.18	0.13	0.23	0.17
Friends	0.05	0.04	0.08	0.02	0.19	0.15	0.26	0.20
Health	0.14	0.14	0.15	0.15	0.21	0.16	0.27	0.22
Location	0.15	0.16	0.20	0.20	0.20	0.10	0.26	0.11
Estimates for Older Adult's Locations								
	Unadj.	**Adj.**	**Unadj.**	**Adj.**	**Unadj.**	**Adj.**	**Unadj.**	**Adj.**
Nether-lands	0.29	0.29	0.31	0.32	0.27	0.26	0.30	0.29
Tuscany	0.32	0.30	0.35	0.34	0.45	0.37	0.52	0.40
Manitoba	0.43	0.44	0.51	0.51	0.21	0.27	0.20	0.28

* $p < 0.001$

Standardized effects not controlled (η) and controlled (β) for other factors are shown. Adjusted estimates are controlled for effects of other factors.

observed, with probabilities of being emotionally and socially lonely of 0.51 and 0.60, respectively, for older adults in poor health, and 0.30 and 0.23, respectively, for older adults in very good health.

In explaining differences in emotional loneliness, there was a significant interaction effect in the availability of a partner relationship and location ($F(2,3462) = 11.7$, $p < 0.001$). After controlling for other factors, among older adults without a partner the estimates were 0.54, 0.47, and 0.64 for the Dutch, Tuscans, and Manitobans, respectively, and among those with a partner the estimates were 0.14, 0.23, and 0.41, respectively. In explaining differences in social loneliness, there were no significant interactions.

Discussion

The first aim of the study was to compare loneliness in different cultural locations. Previous studies of cross-cultural differences in loneliness adopted single-item indicators (e.g., Stack, 1998), adopted unidimensional scales (Goodwin et al., 2001; van Tilburg et al., 1998), or did not observe differential effects for subscales (Rokach et al., 2001). We adopted an instrument with two subscales. Emotional and social loneliness should have been distinguished as dimensions of loneliness, since the two factors have a low correlation and the three study locations ranked differently according to each factor. Furthermore, the negatively phrased items indicate emotional as well as social loneliness, while the positively phrased items indicate social loneliness, predominantly. It is, therefore, not specifically the polarity but the content of the items that distinguishes between emotional and social loneliness. As hypothesized, the intensity of feelings of loneliness differed among older adults in the Netherlands, Tuscany, and Manitoba.

Results of the study by Höllinger and Haller (1990) showed differences in the identification of the partner as a support provider across countries. Based upon that observation, we expected to observe less emotional loneliness among Tuscans than among the Dutch and Manitobans. In the comparison across the three study locations, the Manitobans had a higher probability of being emotionally lonely than the Tuscans, but the Dutch had about the same probability as the Tuscans. However, in the Netherlands the presence of a partner protected against loneliness to a higher degree than in Tuscany or Manitoba. When we compare the older adults without a partner across the locations, the likelihood of being lonely was highest in Tuscany, followed by the Netherlands and Manitoba, which does corroborate the hypothesis on cross-cultural differences in emotional loneliness.

On the basis of differences in kinship formation across nations, as observed by Höllinger and Haller (1990), we hypothesized a high probability of being lonely in Tuscany, with a lower probability in the Netherlands, and a lower still in Manitoba. The results fit this hypothesis, although the difference between Manitobans and the Dutch disappeared when we controlled for other determinants of loneliness. Differences in friendships across nations resulted in the formulation of an alternative hypothesis, with Manitobans ranked highest and Tuscans ranked lowest on social loneliness. The rejection of this alternative hypothesis suggests that the overall value systems of the relevant societies do not strongly differ with respect to friendship, congruent with Höllinger and Haller's observation that there were no differences in friendship across the nations among younger adults. On the individual level, the results of the analysis of variance showed that having friends available as frequently contacted personal-network members protects against loneliness to about the same extent as the availability of kin.

Within the Netherlands programs have been developed for reducing loneliness among older adults (Stevens, 2001). These programs focus on the stimulation of friendship in later life. From the evidence presented in the current study, it can be concluded that stimulating friendship may result in the alleviation of social loneliness. However, since many older adults without a partner suffer from emotional loneliness, in particular in Manitoba, programs should be developed to reduce emotional loneliness.

A second aim of the study was to examine whether selected determinants contributed differentially to the explanation of differences in loneliness across the locations. With the exception of the availability of a partner, we observed neither clear indicators of differential item functioning (DIF) related to a predictor nor interaction effects in our analysis of variance between the location and a predictor. This is remarkable for the availability of kin and friends, in particular, since different measurement procedures were adopted across the locations. Due to the limited comparability of the data sets, the selected predictors were crude indicators of older adult's social integration and, consequently, the variance explained within the multivariate analyses was limited. However, we conclude that the selected determinants are robust predictors of differences in loneliness across cultures.

A third aim of the study was to explore whether there is cross-cultural stability of the measurement instrument developed in the Netherlands and translated into Italian and English. Previous research on cross-cultural differences in loneliness has paid little or no attention to measurement problems. The results

showed that, to a certain extent, the measurement of loneliness seems to be contextual and culture bound. It is not our intention to deny variability in the cross-cultural meaning of loneliness. However, despite the existence of several definitions of loneliness and multiple measuring instruments, there is agreement on the core of the loneliness concept (Peplau & Perlman, 1982). Therefore, our focus was not on construct bias. The similarity in design of the data collection in the three locations urged us to focus on DIF. Ensuring construct comparability when testing for between-group differences is of paramount importance in cross-cultural research. Measurement equivalence will hold if culturally related effects have influenced the common-variance components of a construct's indicators and are not differentially influenced by their uniquely specific components. A clear example of DIF was observed for one item, which was the availability of a partner relationship, one of the strongest and most consistent predictors of the absence of loneliness. It is understandable that older adults living with a partner are not likely to admit to loneliness by stating that there is emptiness around them. For most loneliness items, DIF was detected according to the older adult's location. However, neither the content of these items nor the results of the statistical analyses suggests a sense of cultural differences that might explain the bias in these items. DIF does not necessarily identify a measurement problem, but instead, may reflect the characteristics of a particular group of individuals. Roznowski and Reith (1999) argue that many well-constructed tests contain items whose responses are related to features of individuals. They observed that the inclusion of biased items did not degrade measurement quality. We observed that correction for DIF resulted in more precisely estimated means for older adults in the three locations, as indicated by the increased explained variance in loneliness, larger differences across the locations, and the consistent ranking of the study locations.

For the moment we conclude that the differences in loneliness among older adults in the Netherlands, Tuscany, and Manitoba can be assessed with the instrument adopted. In the future more qualitative studies should attempt to reveal the meanings associated with the specific items and with loneliness, in general, across these three cultures and others. Other studies might also look at the cross-cultural differences in clinical practice, especially as these relate to emotional versus social loneliness as sub-components of overall loneliness.

References

Camilli, G., & Congdon, P. (1999). Application of a method of estimating DIF for polytomous test items. *Journal of Educational and Behavioral Statistics, 24,* 323–341.

Chipperfield, J.G., Havens, B., & Doig, W. (1997). Methods and description of the Aging in Manitoba project: A twenty-year longitudinal study. *Canadian Journal on Aging, 16,* 606–625.

de Jong Gierveld, J. (1989). Personal relationships, social support, and loneliness. *Journal of Social and Personal Relationships, 6,* 197–221.

de Jong Gierveld, J., & Kamphuis, F.H. (1985). The development of a Rasch-type loneliness scale. *Applied Psychological Measurement, 9,* 289–299.

de Jong Gierveld, J., & van Tilburg, T.G. (1991). Kwaliteitsbepaling van Meetinstrumenten via Triangulatie [Triangulation as method to assess the quality of measuring instruments]. In P.G. Swanborn, J. de Jong Gierveld, T.G. van Tilburg, A.E. Bronner, & G.W. Meijnen, *Aspecten van Onderzoek: Theorie, Variabelen en Praktijk [Aspects of research: Theory, variables and practice]* (pp. 29–64). Utrecht, The Netherlands: Rijksuniversiteit Utrecht, Vakgroepen Planning, Organisatie en Beleid & Empirisch Theoretische Sociologie.

Ester, P., Halman, L., & de Moor, R. (Eds.) (1994). *The individualizing society: Value change in Europe and North America.* Tilburg, The Netherlands: Tilburg University Press.

Goodwin, R., Cook, O., & Yung, Y. (2001). Loneliness and life satisfaction among three cultural groups. *Personal Relationships, 8,* 225–230.

Havens, B., & Hall, M. (2001). Social isolation, loneliness and the health of older adults. *Indian Journal of Gerontology, 14,* 144–153.

Höllinger, F., & Haller, M. (1990). Kinship and social networks in modern societies: A cross-cultural comparison among seven nations. *European Sociological Review, 6,* 103–124.

Johnson, D.P., & Mullins, L.C. (1987). Growing old and lonely in different societies: Toward a comparative perspective. *Journal of Cross-cultural Gerontology, 2,* 257–275.

Jylhä, M., & Jokela, J. (1990). Individual experiences as cultural: A cross-cultural study on loneliness among the elderly. *Ageing and Society, 10,* 295–315.

Knipscheer, C.P.M., de Jong Gierveld, J., van Tilburg, T.G., & Dykstra, P.A. (1995). *Living arrangements and social networks of older adults.* Amsterdam: VU University Press.

Martin, P., Hagberg, B., & Poon, L.W. (1997). Predictors of loneliness in centenarians: A parallel study. *Journal of Cross-cultural Gerontology, 12,* 203–224.

Peplau, L.A., & Perlman, D. (1982). Perspectives on loneliness. In L.A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 1–18). New York: Wiley-Interscience.

Rokach, A., Orzeck, T., Cripps, J., Lackovic-Grgin, K., & Penezic, Z. (2001). The effects of culture on the meaning of loneliness. *Social Indicators Research, 53,* 17–31.

Rokach, A., & Sharma, M. (1996). The loneliness experience in a cultural context. *Journal of Social Behavior and Personality, 11,* 827–839.

Roznowski, M., & Reith, J. (1999). Examining the measurement quality of tests containing differentially functioning items: Do biased items result in poor measurement? *Educational and Psychological Measurement, 59,* 248–269.

Russell, D.W., Peplau, L.A., & Cutrona, C.E. (1980). The revised UCLA loneliness scale. *Journal of Personality and Social Psychology, 39,* 471–480.

Stack, S. (1998). Marriage, family and loneliness: A cross-national study. *Sociological Perspectives, 41,* 415–432.

Stevens, N.L. (2001). Combating loneliness: A friendship enrichment programme for older women. *Ageing and Society, 21,* 183–202.

van Baarsen, B., Snijders, T.A.B., Smit, J.H., & van Duijn, M.A.J. (2001). Lonely but not alone: Emotional isolation and social isolation as two distinct dimensions of loneliness in older people. *Educational and Psychological Measurement, 61,* 119–135.

van de Vijver, F.J.R., & Poortinga, Y.H. (1997). Towards an integrated analysis of bias in cross-cultural assessment. *European Journal of Psychological Assessment, 13,* 29–37.

van Tilburg, T.G., de Jong Gierveld, J., Lecchini, L., & Marsiglia, D. (1998). Social integration and loneliness: A comparative study among older adults in the Netherlands and Tuscany, Italy. *Journal of Personal and Social Relationships, 15,* 740–755.

Vermunt, J.K., & Magidson, J. (2000). *Latent Gold 2.0 user's guide.* Belmont, MA: Statistical Innovations.

Weiss, R.S. (1973). *Loneliness: The experience of emotional and social isolation.* Cambridge, MA: MIT Press.